DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-003196
Date Inspected: 05-Jul-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 1400
OSM Departure Time: 2300
Location: Shanghai China

CWI Name:	Zhu Zhong Hai/ An Qing Xinag			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Tower

Summary of Items Observed:

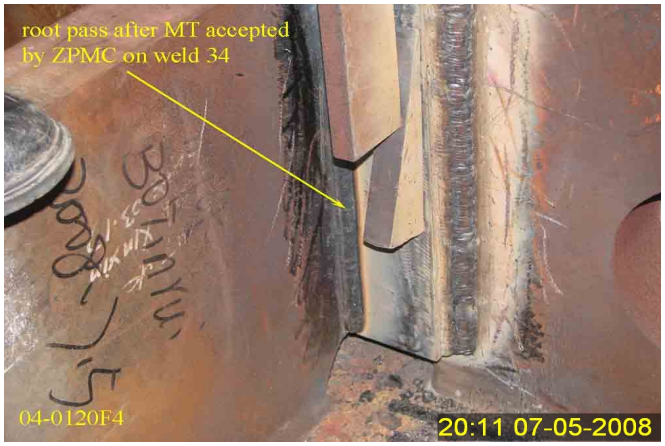
89M part mock up

This Quality Assurance (QA) inspector arrived at ZPMC in Shanghai China for observations of the Orthotropic Bridge Girders (OBG) and Self Anchored Suspension (SAS) Bridge. This QA inspector observed ZPMC performing welding on the partial 89m mock-up as per Submittal SUB101R2. It was noted that ZPMC did not follow this procedure as outlined, issues are as follows, A) ZPMC began welding the diaphragm to lug plate first in sequence which according to the submitted procedure this weld was to be welded second (Number 3G in the procedure). B) ZPMC was to perform post weld heat treatment for controlled cool down prior to placing the second weldment in sequence. ZPMC after completing the first weldment proceeded immediately to the second weld without performing the noted process (Number 3F in the procedure). Upon completing both weldments ZPMC then started the controlled cool down for both weld locations simultaneously. The above issues were outside the procedure outlined in the approved submittal. An incident report will be generated for these issues.

The following is the process in which ZPMC performed the welding.

This Quality Assurance (QA) inspector arrived at ZPMC in Shanghai China for observations of the Orthotropic Bridge Girders (OBG) and Self Anchored Suspension (SAS) Bridge. This QA inspector was given notification by ABF representative Don Williams that ZPMC would be performing the 15mm fillet welds at MUB-MA21 A/J 33 & 34 on the partial 89m mock-up under submittal number SUB101R2 dated June 3, 2008. This QA inspector noted that ZPMC was onsite of the 89m mock-up performing pre-heat prior to placing “dogs”(see digital photo below) attached to the diaphragm plate for the purpose of holding the lug plate in place to perform the root pass. Once the required minimum temperature was met of 180ºc ZPMC welder placed the root pass for weld number

MUB-MA21 A/J 34 under WPS-B-T-4113-2 using the Shielded Metal Arc Welding (SMAW) process in the vertical position (3G), ZPMC welder was noted as Li Mengqian. Noted personnel at this location were ZPMC's CWI Zhu Zhong Hai and ABF personnel Kim Xiao Jun Peng and Yang Yiheng. Once ZPMC had completed welding of the root pass Magnetic Particle (MT) was performed by Bo Tin Rui a ZPMC MT technician and was witnessed by this QA inspector (see digital photo below). It was relayed to this QA inspector that weld appeared acceptable by ZPMC. This QA inspector spoke with both ABF representatives pertaining to the acceptance of the root pass and MT due to this being a ABF hold point for acceptance before welding could continue as outlined in the submittal notes on the first page. It was relayed that ABF did accept the root pass and MT, at this point the welding could resume. ZPMC completed the SMAW fillet weld for weld number 34 by 2000hrs and proceeded to weld number 33 which is the stiffener plate to lug plate. The FCAW process was used for this weld under WPS-B-T-2133. Upon beginning of the welding process work was stopped for approximately 20 min due to pre – heat above the 230º maximum. Once the temperature had cooled the root pass welded. ZPMC MT technician Zhou Dong Yun performed the inspection which was witnessed by this QA inspector and ABF representative. It was relayed that the testing was acceptable and ABF rep. Kim Xiao Jun Peng acceptable the MT and root pass, ZPMC proceeded with the FCAW process. After the first intermediate weld pass the interpass temperature had reached beyond the 230º max. At this point ZPMC let the weld cool below the maximum temperature which took about 10 min. and welding continued. The welding was then completed by 2045 hrs at this location with ZPMC placing approximately 5 total weld passes. The beginning temperature for the controlled cool down rate as outlined in the above submittal was 175ºc max. at 2100 hrs. ZPMC's CWI An Qing Xian shall be the personnel to monitor this rate every 30 min. as relayed to this QA inspector.



Summary of Conversations:

This QA inspector spoke with ZPMC QC personnel Shen Xue Jun (who translated for the CWI) about heat control and monitoring after the welding was completed as outlined in the submittal. It was relayed that ZPMC would have personnel at the 89m mock-up to monitor this process until ambient temperature was achieved. It was also relayed that ZPMC would use the heating block used for preheat to maintain and control the temperature at a maximum rate of 40ºc per hour. ZPMC was concerned that the temperature was to high for the controlled cool down and it was relayed from this QA inspector that the 40ºc was a maximum as stated in the submittal and if ZPMC felt a slower cool down rate would be beneficial that it was their choice as long as it did not achieve a rate higher than what is stated above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Joshua Ishibashi , China- 1-376-471-0411, who represents the Office of Structural Materials for your project.

Inspected By:	Riley,Ken	Quality Assurance Inspector
Reviewed By:	Carreon,Albert	QA Reviewer